

App. No. 10/708,301
Amendment dated March 15, 2006
Reply to Office action of November 15, 2005

REMARKS

Summary of Amendments

Claim 1 has been amended to recite the general claim 2 limitation that the metal plate is mechanically attached to the ceramic susceptor. Claim 2 remains in its original form as enumerating limitations on how the metal plate is attached to the susceptor.

In addition, new independent claims 15 and 16 have been submitted. Claim 15 incorporates the limitations of claims 2 and 8, while claim 16 incorporates the limitations of claims 2, 3 and 8.

Accordingly, since claims 5 and 7 have previously been canceled, claims 1-4, 6 and 8-16 are pending in the present application. And since only one independent claim was presented on filing this application, no excess claim fees are due.

Rejections under 35 U.S.C. § 103

Claims 1, 2, 3, 4, 6 and 9-14: Ramanan et al. '189 in view of Hiramatsu et al. '006 or Ito et al. '116

Claims 1, 2, 3, 4, 6 and 9-14 stand rejected as being unpatentable over U.S. Pat. No. 6,639,189 to Ramanan et al., in view of U.S. Pat. No. 6,507,006 to Hiramatsu et al. or U.S. Pat. No. 6,717,116 to Ito et al.

Claim 1 has been amended to recite that the claimed metal plate is "mechanically attached to" the ceramic susceptor constituting a wafer holder. Applicants point out that this feature enables the claimed holder to heat more uniformly.

The rejections under this section are made primarily over the Ramanan et al. reference, with Hiramatsu et al. and Ito et al. being cited in combination with Ramanan et al. against the claim 1 limitation regarding the heating element pattern. Accordingly, the following addresses how in the first place the present invention as recited in the independent claims distinguishes over Ramanan et al.

Ramanan et al. disclose: a heater member (bakeplate 20 in Fig. 1, bakeplate 70 in other figures) whose front and back sides are ceramic layers having a thermal conductivity of at least 100 W/mK; a resistive heating element incorporated in the heater member (see column 13, lines 45-51, for example); and a cooling member 26 (heat sink) having a thermal capacity that is at least 10 times greater than that of the

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heater member, formed of a "thermally conductive metal such as aluminum, stainless steel, copper, combinations of these, or the like" (column 14, lines 10-12).

The Office action alleges that Ramanan et al. "shows the metal plate and the ceramic susceptor being fastened to each other." On the contrary, it is respectfully countered that this is not really the case. From a close reading of the patent, it is clear that the cooling member 26 in Ramanan et al. is designed to be vertically shifted into and out of thermally conductive contact with the bakeplate 20/70. Thus, it is at least certain that the cooling member 26 and bakeplate 20/70 of Ramanan et al. are not are "mechanically fastened" to each other.

In contrast, claim 1 as amended recites that the claimed metal plate is mechanically attached to the ceramic susceptor.

With regard to claim 2, the Office action attempts to dismiss claim 2 as reciting a product-by-process limitation. Nevertheless, if in submitting claim 2 Applicants were actually attempting to distinguish the present invention by the method in which its components are assembled, then their answer to this rejection would be to call into question the relevance of Ramanan et al. to rejecting claim 2.

Instead, claim 2 is meant to positively recite the structural limitation that in the claimed holder, the metal plate and ceramic susceptor are fastened together, and to enumerate preferable means for fastening the metal plate and susceptor together. Regardless of the allegation that claim 2 merely recites a product-by-process limitation, claim 1 as amended now reciting that the metal plate is mechanically attached to ceramic susceptor changes the significance of claim 2 to setting forth limitations on the mode of the mechanical attachment now recited in claim 1.

The cooling member 26 of Ramadan et al. is for a completely different purpose than—indeed, for the opposite purpose from—the metal plate of the present invention, and therefore functions completely differently from how the metal plate of the present invention functions. It is respectfully submitted that the present amendment to claim 1—i.e., that the metal plate is mechanically attached to ceramic susceptor—makes it technically impossible for Ramadan et al. to be relevant as a reference, because as noted above the cooling member 26 in Ramanan et al. is designed to be vertically shifted into and out of thermally conductive contact with the bakeplate 20/70.

With respect to claim 8, the Office alleges that Kadomura et al. show a metal plate having "the claimed aluminum silica carbide composite material." Actually, the plates 8a and 8b in Kadomura et al. are mentioned as being made of a metal or metal alloy having a large thermal conductivity, and specifically as being of molybdenum (column 5, lines 45-51 of Kadomura). The *temperature adjusting jacket* in Kadomura et al., on the other hand, is described as being made of a composite

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aluminum-based material, prepared "by treatment of aluminum or an aluminum alloy with inorganic fibers of alumina, silicon carbide, potassium titanate, aluminum borate or the like under a high pressure" (column 4, lines 7-9).

Again with regard to the rejection of claim 1 over Ramadan et al., it is noted that the Office action alleges that Ramanan et al. shows "a heat-reflecting metal plate having the thermal conductivity greater [than] that of the ceramic susceptor." But this is false, in the first place because the cooling member 26 (heat sink) of Ramanan et al. is for *cooling* rather than reflecting heat. This point is clear precisely from the passage quoted in the Office action—i.e., column 13, lines 20-29. Nevertheless, the Office here does acknowledge that the metal plate of the present invention having a higher thermal conductivity than that of the susceptor is in order that the metal plate will function to *promote diffusion of heat from the resistive heating element toward the retaining side of the susceptor*.

The recitation that the metal plate is heat-reflecting, specifically, that it is for promoting diffusion of heat from said resistive heating element toward said retaining side, has been ignored by the Office in considering the merits of claim 1. The recitation that the metal plate is heat-reflecting has been removed from claim 1.

New claims 15 and 16, meanwhile, recite that the metal plate is "made of one selected from Al-SiC, Cu-W and Cu-Mo"—a claim 8 limitation—"to have a thermal conductivity of the metal plate is greater than that of the susceptor."

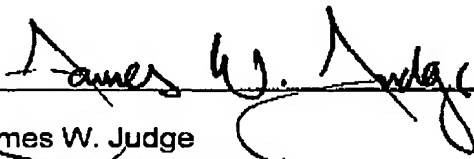
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A response to this Office Action was due by February 15, 2006, and consequently a Petition for Extension of Time, along with fee transmittal and credit-card payment authorization forms, is attached hereto. Please consider this amendment as timely filed.

Accordingly, Applicants courteously urge that this application is in condition for allowance. Reconsideration and withdrawal of the rejections is requested. Favorable action by the Examiner at an early date is solicited.

Respectfully submitted,

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